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Wireless Universal Display

With the wide adoption of the WiFi, Bluetooth and UWB standards and the rapid decline of the cost of the chipsets needed to support these standards, a flood of next generation equipment and devices is expected to hit the home and business markets in the next few years. Such devices typically come with their own user interface, operating manual and remote control and provide a different user interface and menu option for each device. By combining and standardizing the user interfaces for all such devices into a common interface format resembling a web browser, which most users are already familiar with, a great deal of the complexity and the need for detailed, often confusing operating manuals can be eliminated.

To date several attempts have been made to create a universal remote control device by using different types of infrared and radio frequency (RF) transceivers. Such solutions, however, simply replace one proprietary user interface (UI) with another, and typically result in preventing access to many of the features in the original UI for the particular device. Some solutions even allow the universal remote control device to be connected to a TV or a computer. However, proprietary interfaces and corresponding menus are still utilized.

The present invention provides for a user to utilize a Data Collection Server (DCS) as a gateway in communication with ordinary home or office devices and the Internet on one side and ordinary display devices on the other. The DCS enables manufacturers of home and office devices as well as software developers to embed a second wired or RF interface in each device. This second interface, which supports standard protocols and UI technology such as tcp/ip, xml, html, Java and web browsers, will be managed by the DCS and allow single or multiple user access to more features and functions. Some of the devices may support IP

addressing while others may only support a proprietary communication via an external adapter which will allow communications with the DCS.

Such secondary access will also allow users to customize their home or office environment, track their profiles, activate or block features, change their menus and settings as well as provide access to third parties for maintenance, upgrades or monitoring rights over standard WiFi, UWB and other RF or wired interface. The DCS may have hundreds of small programs downloaded from the Internet which will allow users to perform specific functions and interact with specific web services. On the device side, the DCS supports both proprietary and standard sets of protocols which allow universal interface to any device. On the display side, the DCS enables a customized view of selected devices, their status and optional controls and features as well as manuals or support information. Such information can be displayed by the DCS on more than one display at a time which provides easy access to all home devices from several locations in the home or office. Such information may be used by the DCS to scan the Internet for web services which may offer new features, upgrades, services or improved monthly service plans. The DCS also ensures that the information available represents the latest data from the manufactures and software providers by automatically checking authorized websites or server domains. The DCS can be located in the house or the office or can be hosted in a remote environment and preferably provide the data collection and display functions via a high speed Internet link. The DCS which can be a standard PC or a proprietary computer running windows, Linux or other operating system may include a display unit and be a portable computer with a touch screen or a wall mounted TV.

An existing problem with PDA's and cell phones is that consumers prefer them to be as small and light-weight as possible which eliminates the ability to display rich menus that

provide access to information in a usable and interactive way. Such devices also limit user interface capabilities because the devices do not utilize mouse and keyboard peripherals.

In general, special purpose or custom built equipment include a relatively small display, such as a standard two line LCD display, with minimal functionality for displaying user interface menus. It is a purpose of this invention to provide a device and process by which such home and office consumer devices share access and use an external ubiquitous DCS device instead of or in addition to the standard two line LCD display or remote control that the manufacturer already provides in its products.

By standardizing the protocols and interfaces the DCS supports, and by utilizing traditional HTML and Java as well as .NET capabilities, a variety of manufacturers can dramatically reduce the cost of their consumer products and systems (e.g. Phone systems, Gadgets, Appliances, etc.) and rely on the DCS units which will be sold separately or installed on an owners home computer or cable box to manage all of the products' features. A household or a company may use a single DCS to manage hundreds of specialized devices, thereby dramatically reducing the maintenance costs of the products and extending their usefulness. Another intent of this invention is to reduce the rate of obsolescence for consumer products due to lost or broken remotes, lost manuals or incompatibility.

Because most such consumer products are currently sold as stand alone items with proprietary RF remote and display menus, it is practically impossible for a manufacturer to upgrade or make changes to the product software or feature set after the product is shipped from the manufacturer. This invention seeks to eliminate this problem and enable manufacturers to dramatically reduce development time since they can always upgrade the software when the user registers the product by interfacing the product with the DCS which, in turn, is in communication

with the Internet and can instantly check with the manufacturer for the latest software patch or new features offered through an upgrade. This type of upgrade will allow manufacturers high margin upgrades to commodity type consumer goods.

Another example is the ability to control multiple devices and systems from a user's DCS. By simply clicking on an icon presented on the display screen to initiate a session with such devices or systems, a menu of functions can instantly appear which show, for example, a collection of jobs from the different devices, calls to return from the caller ID info, new features to install, a security alarm breach on the Internet firewall, a missing RFid which was attached to documents, pet feeding machine needs to be re-filled, etc. The session can also be linked to other people or services such as the police or emergency personnel, technical support or outsourced administration personnel, if necessary. The DCS may initiate outbound communications via preset profiles to one or multiple individuals via email, instant messenger, telephone or RF upon preprogrammed or abnormal events which take place. As an example, the removal of a box containing a firearm from a specific room may trigger an RFid message which will cause the DCS to issue an alarm to one or multiple parties. The same RFid inventory information can be used to locate and keep track of inventory, freshness of food products or battery life which can be translated by the DCS to action items which needs to be attended to.

With the increasing complexity involved with audio/video copyrights and rights of use, there is also a need for a system certified by the owners of the media to allow individual users to move files between their devices while maintaining compliance with copyright laws. The DCS can provide this function by monitoring, authenticating and reporting such information if necessary.

With reference to Fig. 1, an example of such an environment containing consumer electronic devices is a home or office in which many devices such as TVs, VCR, audio equipment, CD/DVD/DVR, refrigerators and home appliances, lighting systems, alarms, RFid, windows, AC Power, PBX and phones, home and garden devices, cable box, DSL/cable modems, PCs, toys and robots, office equipment, vehicles, medical equipment and other electronic equipment will have broadband network connectivity via wired or wireless technology. Such DCS may have a built in or external wireless hub attached to it (RF) which will support one or more display units (A). The DCS may be a standard laptop computer with an optional touch screen or an HDTV set with a thin client computer which functions as the medium to display the enhanced menu and user interface for all the home or office devices. The DCS will act as a universal remote control and obtain centralized status information of the consumer electronic devices and systems.

As shown in Figs. 1 and 2, a user may use a wireless authentication device (B), such as a cell phone while at home to control the household devices but use a PC while at work to control the same household devices. In addition a different menu with different personal settings for the same devices can be displayed upon authentication of the user. A person entering his house will trigger the wireless authentication device (B) such as an RFid or Bluetooth device, or cell phone to be authenticated by the house DCS to automatically disable the home alarm system (C) . Such identification may be programmed to also change the home settings to user preset options such as to switch on the TV and play the daily news program from the DVR. Some devices may be controlled via RF interface while others may be wired through a local area network (LAN).

A different scenario for this invention may be a traveler who is visiting a hotel or an airport and needs access to devices in his home or office but needs to use a full screen display, mouse and keyboard. By initiating a session via a public "kiosk" display unit (D), the DCS unit in the user's home, for example, will sense a digital handshake from the authentication device (B), such as the user's cell phone or other RF tag device, and initiate a session which will provide access via the Internet or create a session with the user's home or office devices or data.

The user may then redirect the DCS display information from display (A) (which may be in the user's home) to a display on the kiosk (D) and conduct his business. At the end of the transaction the user may be billed for such Internet access session by charging a fee to the credit card or phone account associated with the identifying device used to access the kiosk.

Although next generation devices will be able to interact and transact with each other, this can only be accomplished upon complex setup to initiate and configure such capabilities. Instead of configuring each device individually, the DCS can translate the user settings to download specific configuration settings from the DCS to a new wireless device (B). The DCS provides continuous monitoring of all home and office device activity and can report problems or activity as well as inactivity (e.g., a delivery was made, etc.) to the third party (E) based on settings or data provided from sensors (C) or devices (F).

The DCS can also act as the interface or "trusted party" for other technologies. For example a DCS may be registered in an external database (H) and electronically informed of millions of changes or upgrades available for thousands of devices. Without disclosing which devices it is managing the DCS can screen all such messages for only relevant active devices managed by such DCS and then decide if such options need to be presented to the user via display (A) or devices (E) or other forms.

Since different devices may be using different forms of wireless technologies, the DCS can act as the translator and medium through which such devices communicate or exchange transactions with each other or via the Internet (H). For example the DCS can interact with infrared devices on one side and WiFi on the other side. The DCS can also function as a firewall or security gateway for all such devices since, if such devices are programmed to only transact via the DCS, it will be easier to authenticate the party using the DCS than it would to install separate expensive authentication devices in each such product.

Another example is shown in Fig. 2 where a single wireless DCS device is used for managing transactions between many wirelessly enabled devices. A user instructs the DCS to download a movie from the Internet (NET) to the home PC but then decides to move the downloaded movie to the car video system. The DCS will have to handle the copyright envelope information to ensure the file rights associated with such transfer. In another example, the car reports it needs maintenance to the DCS which can trigger the DCS to provide instructions from an internal database or the Internet to address the problem or to send relevant information via the Internet to the service company.

Another example of the DCS usage is in the context of a user placing an order on the displayed menu to switch to a night mode. Such command may have been programmed to have a 2 minute delay after which lights, AC and many home or office devices as well as answering mode on the home and cell phone change their settings or shut off entirely. Although the user may have used the TV infrared remote to turn it on such transaction will be communicated instantly to the data collector so when the above mentioned shut down command is given the DCS will know to shut down the TV but continue to record the program on the DVR.

Another example would be toy manufacturers who choose to allow owners to customize the movement, interaction and voice features as well as physical programs on their toys. Although many toys come with remote control devices and already have RF capabilities, they cannot be customized by the users beyond the original setting of the manufacturer. By enabling a wireless connection to the DCS which supports remote administration as described above, the users can manipulate, for example, the voice recording to be in the voice of the user or have programs display specific data. The user may also ask the DCS to search the web for all new programs for such device and then decide what should be purchased and installed in a click of a button on any display unit.

The way the DCS interacts with devices, the Internet, and display units, is described in Fig. 3. DCS unit K is continuously collecting information from devices H1-H6 and devices O1-O5, and such information is analyzed in the DCS and compared to the internal custom settings provided by the manufacturer as well as the user. Such data is collected via wired interface W1 and RF interface and may be processed locally, on a hosted service DCS1 or remotely by third parties via web services. The DCS also sends same devices information related to instructions originated via display units D1-D3, the Web, or other devices as long as such instructions confirm with internal security and profile settings. Fig. 3 also illustrates how such devices may be managed remotely via a wired (D2) or wireless interface D1, which may be combined D5 or separate D2 display unit. The DCS keeps historical communications data with all registered devices and keeps historical settings and profiles provided by the user.

The new DCS interface described can be a combination of proprietary and standard wireless or wired protocols and may use a local or hosted data collector, which may be combined or separated from the display unit.

Fig. 4 describes the display menu based on a standard browser which provides transparent navigation, search and command options for features and capabilities stored locally on the DCS, on the devices or on the Internet. It also allows different users to switch profiles and change their environments, menus, files and device inventory instantly. The display menu is communicated from the DCS which collects up to date information from all local and remote items displayed on the users menu. The user may select specific tabs and customize the settings and system information related to each item. The user may also access any device by requesting files, programs or services to be displayed or provided on the display device. Upon such request the DCS will fetch such information and reformat it to be properly displayed on the screen.

Fig 5 describes the architectural components of the DCS which may be a PC or other computer with a CPU, memory, database and many other optional components such as a removable memory, mms or SIM card which may be inserted into a PC or mobile device. The DCS unit may be local or remote to the devices wired or wireless and may need a biometric, RFid or other type of digital identification prior to providing access to certain levels of service. The DCS can support multiple RF interfaces as well as multiple connectors to allow proprietary and standard interconnects. It may include a firewall to be able to protect all the devices and programs it maintains as well as a translation engine which will allow it to convert data and communications from different RF devices and data protocols. It may run one or multiple OS systems and may have internal or external screen with or without a touch screen.

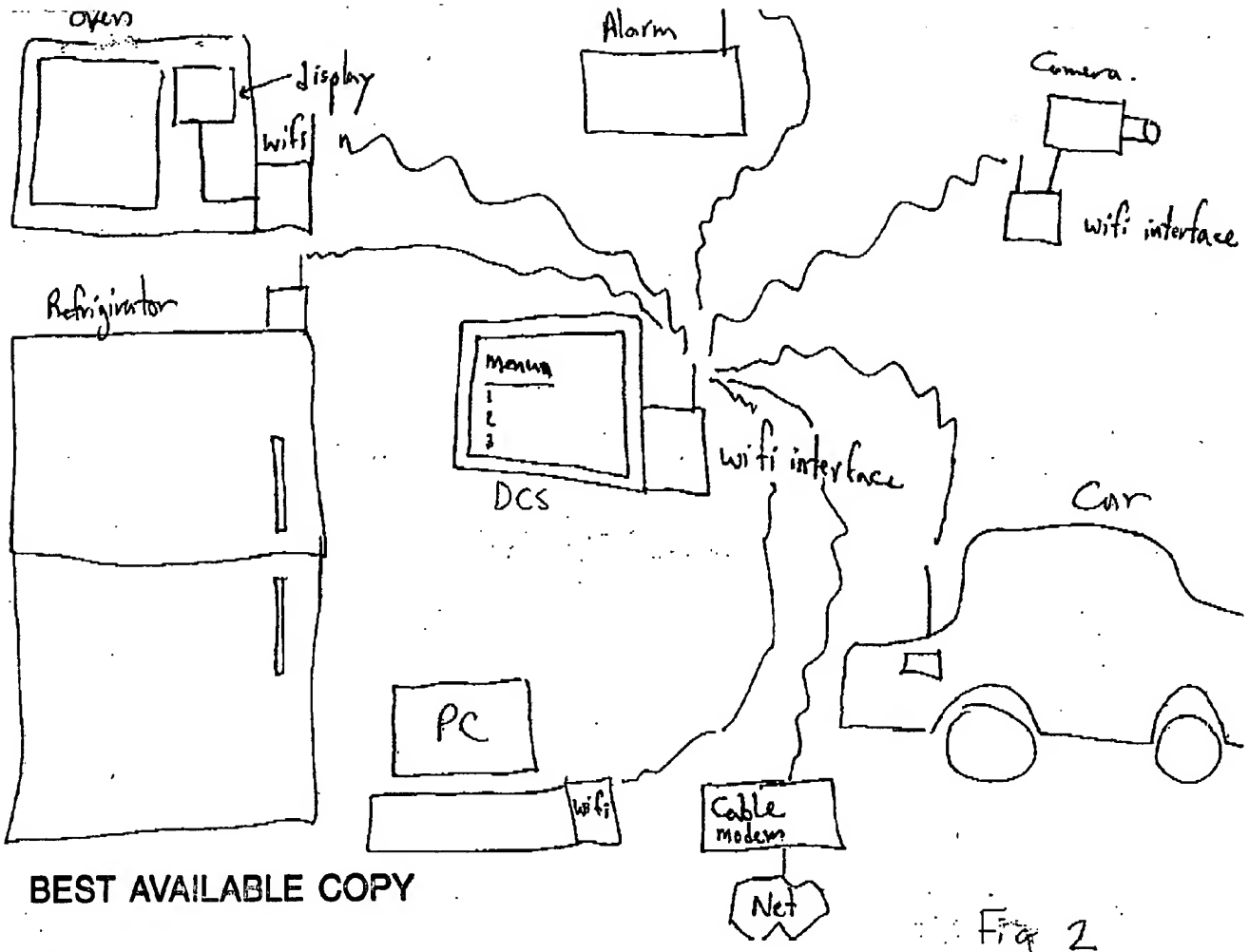

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Fig 2

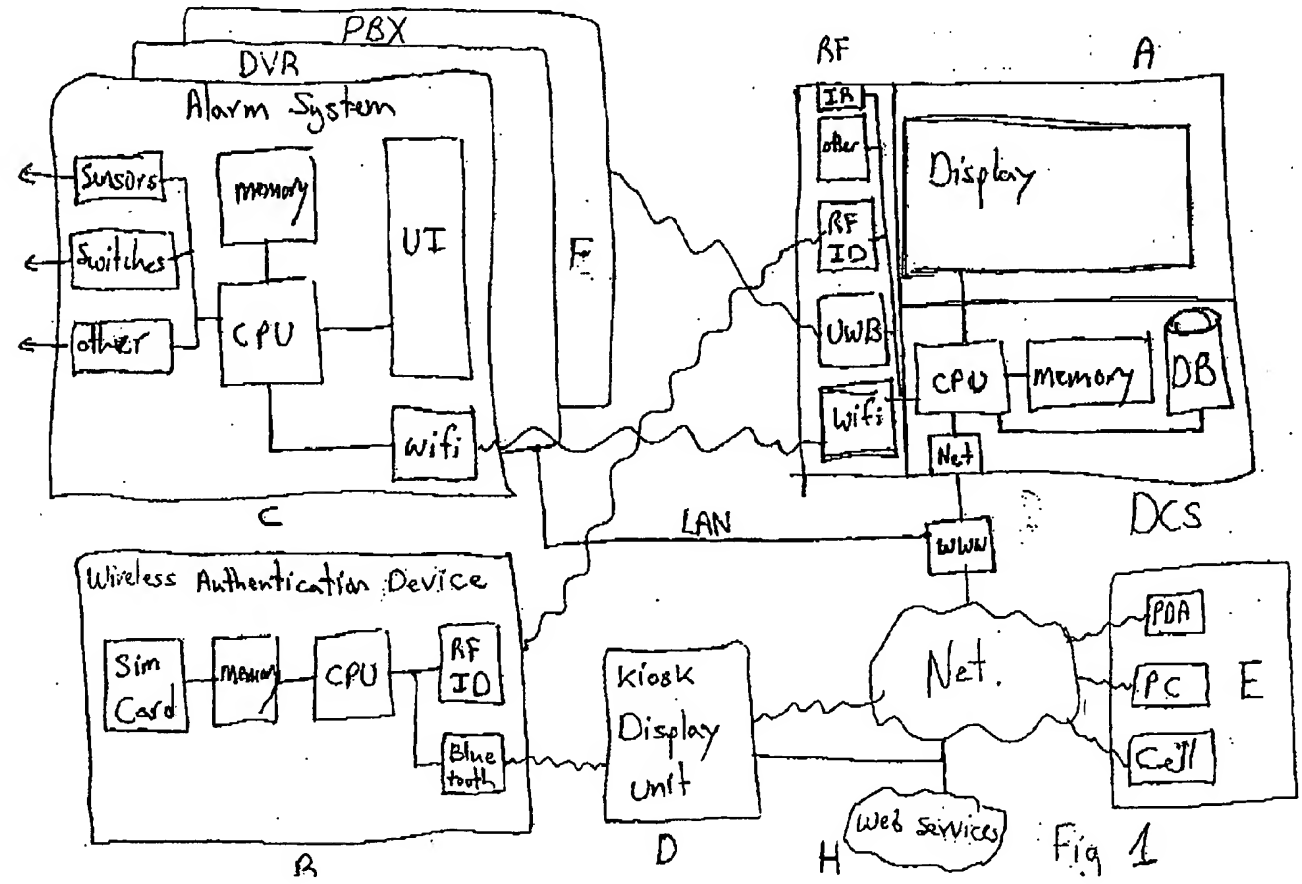

Fig 1

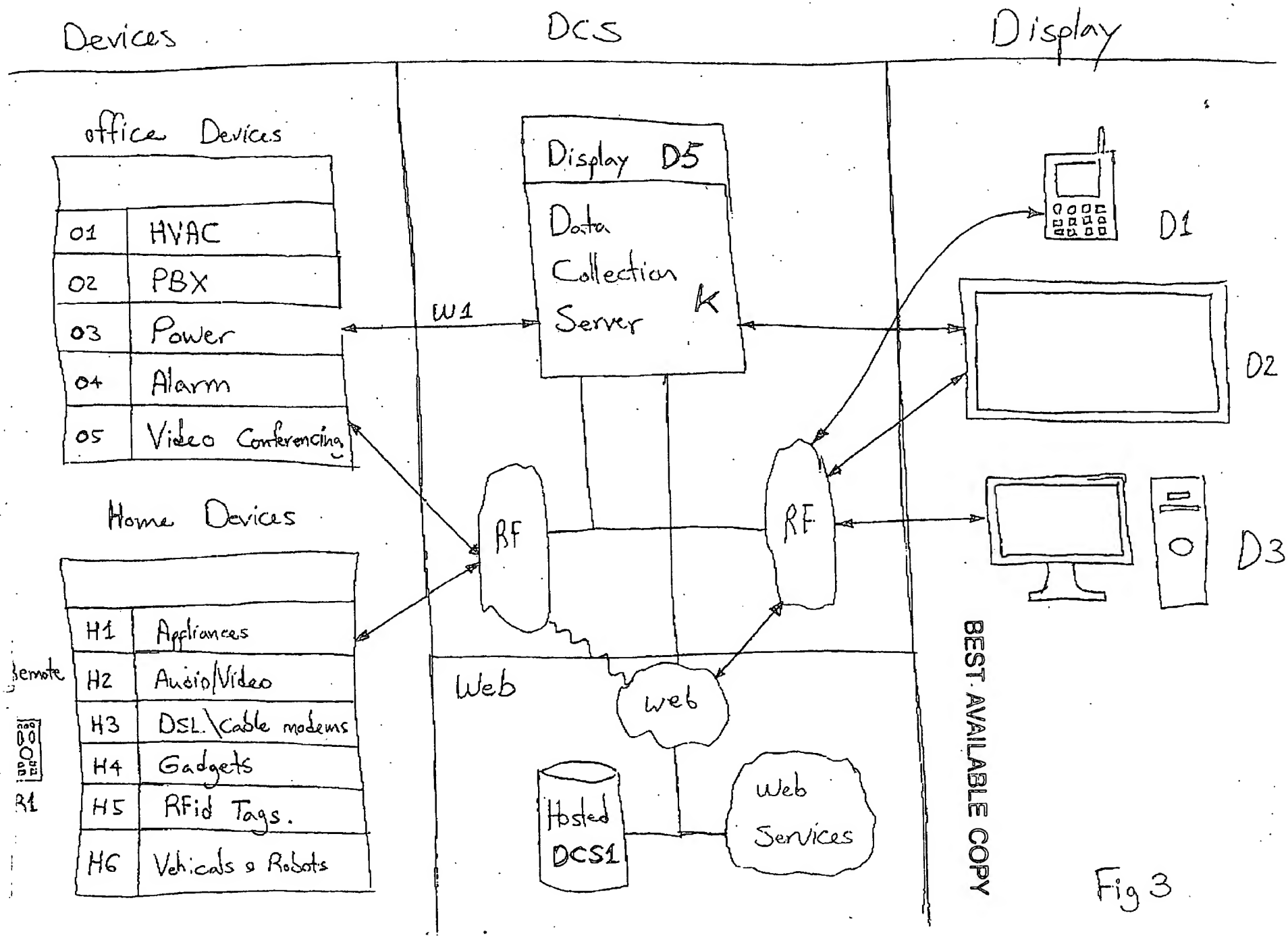
Devices
DCS
Display
office Devices
01 HVAC
02 PBX
03 Power
04 Alarm
05 Video Conferencing
Home Devices
H1 Appliances
H2 Audio/Video
H3 DSL/cable modems
H4 Gadgets
H5 RFid Tags.
H6 Vehicals & Robots
Display D5
Data Collection Server
W1
RF
RF
Web
web
Hosted DCS1
Web Services
D1
D2
D3
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Fig 3

Display Menu

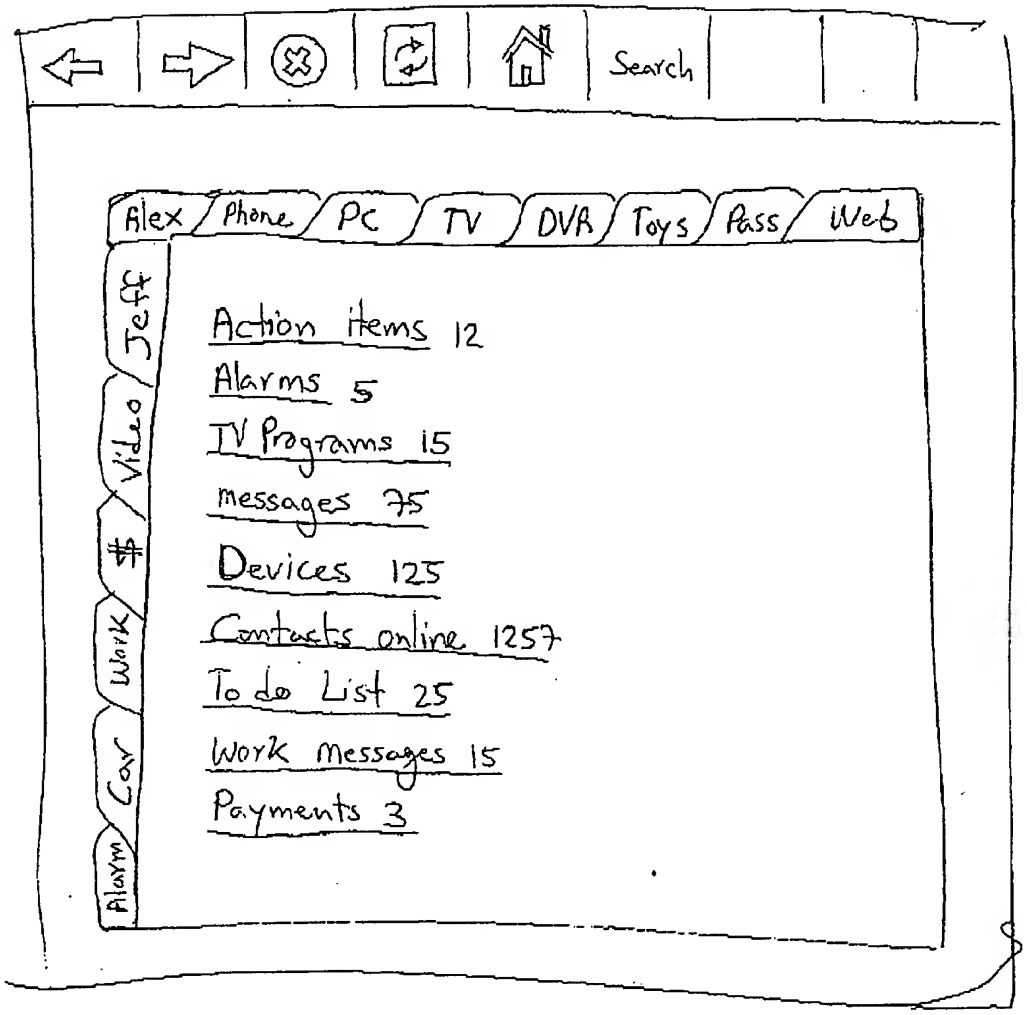

Figure 4

Data Collection Server - DCS

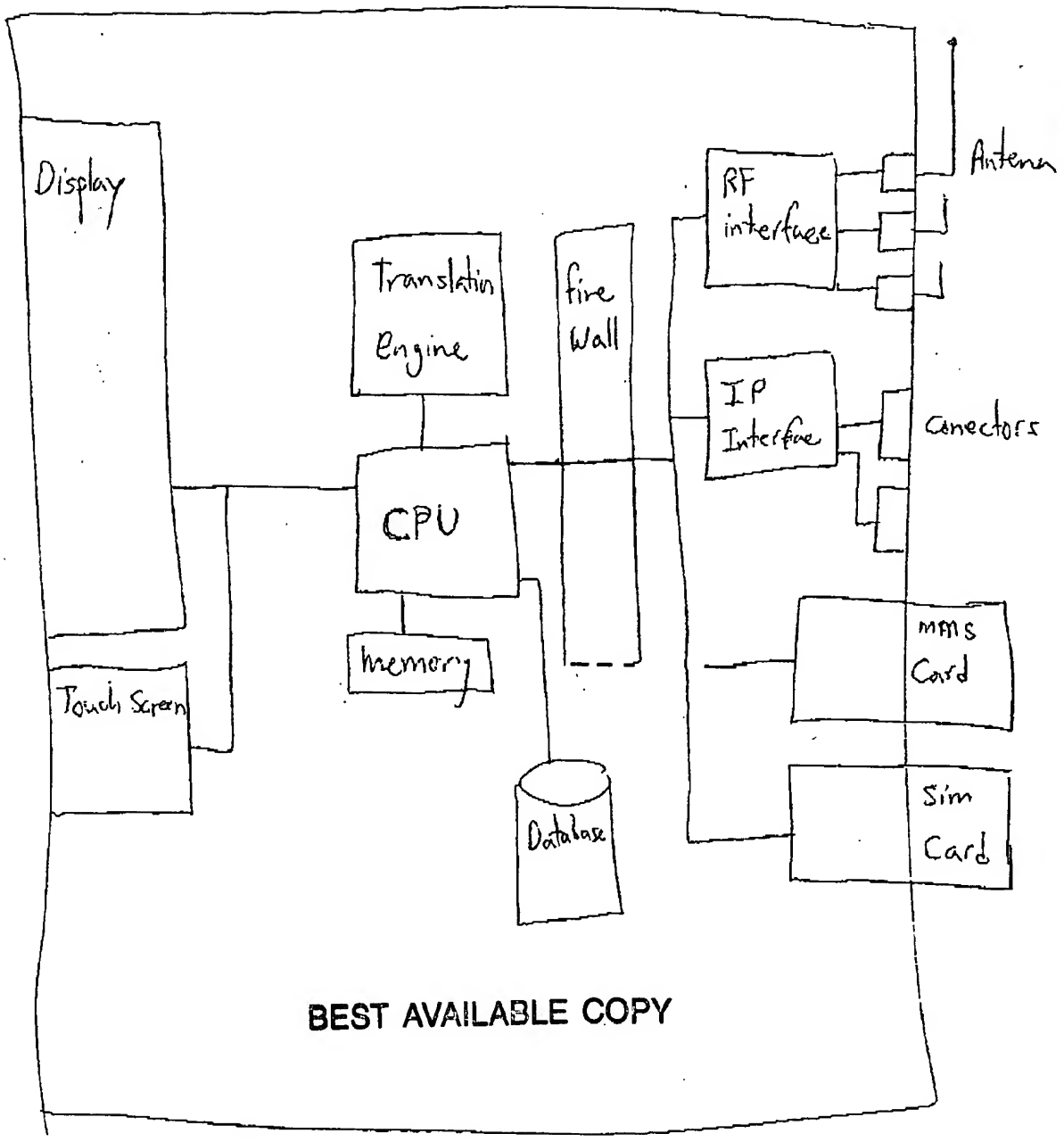

Fig 5

By Express Mail # EV 402735663 US

PROVISIONAL APPLICATION COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION under 37 CFR 1.53(b)(2).

Docket #: 5068-6P	Type a plus sign (+) inside this box→	+

INVENTOR(S)/APPLICANT(S)	
NAME *(First, Middle, Last)*	RESIDENCE *(City and either State or Country)*
Alex MASHINSKY	495 West End Avenue New York, New York 10024

TITLE OF THE INVENTION *(280 characters max)*
Wireless Universal Display

CORRESPONDENCE ADDRESS	
Edward M. Weisz, Esq. (212) 687-2770	Cohen, Pontani, Lieberman & Pavane 551 Fifth Avenue, Suite 1210 New York, New York 10176

ENCLOSED APPLICATION PARTS *(check all that apply)*	
[x] Specification *Number of Pages* [9] [x] Drawing(s) *Number of Sheets* [4]	[] Other *(specify):*

METHOD OF PAYMENT *(check one)*	
[x] A check is enclosed to cover the Provisional filing fees [x] **If no check is enclosed or the enclosed check is insufficient** - The Commissioner is hereby authorized to charge the filing fees or credit any overpayment to Deposit Acct. No. 03-2412.	PROVISIONAL FILING FEE AMOUNTS: **$80**

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government

[x] No

[ ] Yes, the name of the U.S. Government agency and the Government contract number are: _

[x] Small Entity Status is claimed

Respectfully submitted,

Dated: December 10, 2003

By: _____

Edward M. Weisz
Reg. No. 37,257

COHEN, PONTANI, LIEBERMAN & PAVANE
551 Fifth Avenue, Suite 1210
New York, New York 10176
(212) 687-2770

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